Raschet obzhatiy pri prokatke listov
i lent iz tsvetnykh metallov i splavov

AID 584 - I

of calculating the pressure and force of rolling by means of curves obtained through experiments; general methods of reduction calculations in hot and cold rolling for the basic types of rolling mills used for nonferrous metal working, and the comparison of different calculation methods. The book contains instructions on the selection of roll profiles under various rolling conditions, and is provided with tables and diagrams.

No. of References: Total 57; 26 Russian, 1927-1949.
Facilities: A. I. Tselikov, E. S. Rokotyan, S. I. Gubkin and others.

2/2

KHVOLIN, N. N.

KHVOLIN, N. N. -- "Calculation of Reduction in Rolling of Sheets and Strips From Nonferrous Metals and Alloys." Sub 3 Dec 52, Moscow Inst of Nonferrous Metals and Gold imeni M. I. Kalinin. (Dissertation for the Degree of Candidate in Technical Sciences).

SO: Vechernaya Moskva, January-December 1952

AGSYNULIN, Nikolay Asumovich, kandidat tekhnicheskikh nauk; KRUCHER, Gersl'd Nikolayevich, inzhener; PERLIN, I.L., professor, retsenzent; RELOV, A.P., inzhener, retsenzent; SHPOLYANSKIY, L.Ya., inzhener, retsenzent; REMENNIKOV, V.S., redaktor, KAMAYEVA, O.M., redaktor izdatel'stva; VAYNSHTEYN, Ye.B., tekhnicheskiy redaktor

[Production of sheets and strips from light-weight alloys] Proizvodstvo listov i lent iz legkikh splavov. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1957. 310 p. (MLRA 10:10)

(Rolling (Metalwork))

PHASE I BOOK EXPLOITATION SOV/5530

Smiryagin, A. P., N. Z. Dnestrovskiy, A. D. Landikhov, N. N. Kreyndlin, G. N. Krucher, V. A. Golovin, B. L. Urin, and V. N. Gol'dreyer

Spravochnik po obrabotke tsvetnykh metallov i splavov (Handbook on the Processing of Nonferrous Metals and Alloys) Moscow, Metallurgizdat, 1961. 872 p. Errata slip inserted. 9,300 copies printed.

Ed. (Title page): L. Ye. Miller, Candidate of Technical Sciences; Ed. of Publishing House: K. D. Misharina; Tech. Ed.: M. K. Attopovich.

PURPOSE: This handbook is intended for technical personnel of metal-working and machine-building plants, design organizations, scientific research institutes, and laboratories, and for students at schools of higher technical education.

COVERAGE: The handbook discusses the physicochemical and mechanical properties of certain elements and the composition and properties of

Card 1/9

nonferrous metals and alloys, and includes an explanation of the theory of principal methods for the hot and cold working of nonferrous metals and alloys. Reference material on designing, engineering-economic planning, quality control, and other aspects of production is systematized and presented. Each part of the handbook contains explanations of principles underlying basic processes, presents formulas for process and engineering calculations, analyzes properties of metals and alloys, gives parameters of accompanying and secondary processes, and describes equipment and tools and their operational parameters. The authors thank I. L. Perlin, Ya. F. Shabashov, and M. F. Bazhenov. References accompany each part, as well as various chapters. There are 130 references, mostly Soviet.

PART V. MANUFACTURE OF SHEET, STRIP, AND BAND FROM NONFERROUS METALS AND ALLOYS

LANDIKHOV, Aleksandr Denisovich; KREYNDLIN, N.N., red.; KAMAYEVA, O.M., red. izd-va; KARASEV, A.I., tekhn. red.

[Production of nonferrous metal pipes, rods, and shapes]Pro - izvodstvo trub, prutkov i profilei iz tsvetnykh metallov. Izd.2., perer. i dop. Moskva, Metallurgizdat, 1962. 390 p.
(MIRA 16:1)

(Nonferrous metals) (Rolling (Metalwork))

KREYNDLIN, Nikolay Naumovich; MILLER, L.Ye., kand.tekhn. nauk, retsenzent; KRUCHER, G.N., red.; MISHARINA, K.D., red. izd-va; MIKHAYLOVA, V.V., tekhn. red.

[Calculating on reductions during the rolling of nonferrous metals] Raschet obzhatii pri prokatke tsvetnykh metallov. Izd.2., perer. i dop. Moskva, Metallurgizdat, 1963. 407 p. (MIRA 16:5)
(Rolling (Metalwork)) (Nonferrous metals)

AZERNIKOV, V.; ARLAZOROV, M.; ARSKIY, F.; BAKANOV, S.; BELOUSOV, I.; BILENKIN, D.; VATEL', I.; VLADIMIROV, L.; GUSHCHEV, S.; YELAGIN, V.; YERESHKO, F.; ZHURBINA, S.; KAZARNOVSKAYA, G.; KALININ, Yu.; KELER, V.; KONOVALOV, B.; KREYNDLIN, Yu.; LEBEDEV, L.; PODGORODNIKOV, M.; RABINOVICH, I.; REPIN, L.; SMOLYAN, G.; TITARENKO, V.; TOPILINA, T.; FEDCHENKO, V.; EYDEL'MAN, N.; EMME, A.; NAUMOV, F.; YAKOVLEV, N.; MIKHAYLOV, K., nauchn. red.; LIVANOV, A., red.

[Little stories about the great cosmos] Malen'kie rasskazy o bol'shom Kosmose. Izd.2., Moskva, Molodaia gvardiia, 1964. 368 p. (MIRA 18:4)

KREYNDLIN, Yu.Z.

KREYNDLIN, Yu.Z.; KILINSKIY, Ye.L. (Moskva)

Use of butadiune in thrombophlebitis of the legs and in hemorrhoidal veins. Klin.med. 35 no.11:125-127 N '57. (MIRA 11:2)

1. Iz poliklinicheskogo otdeleniya 15-y gorodskoy bol'nitsy (glavnyy vrach P.G.Chuntomov)

(THROMBOPHLEBITIS, ther.
phenylbutazone in thrombophlebitis in legs)
(HEMORRHOIDS, ther.
phenylbutazone)
(PHENYLBUTAZONE, ther. use
hemorrhoids & thrombophlebitis of legs)

KREYNDLIN, Yu.Z.

Treatment of acute hemorrhoidal thrombophlebitis in ambulatory conditions. Khirurgiia 34 no.8:131-132 Ag '58 (MIRA 11:9)

1. Iz poliklinicheskogo otdeleniya 15-y Gorodskoy bol'nitsy Moskvy (zav. khirurgicheskim otdeleniyem M.V. Dement'yeva, glavnyy vrach L.A. Pylayev).

(HEMORRHOIDS, ther.
general & local ther. in ambulatory cond. (Rus))

KREYNDLIN, Yu. Z.

Side effects of butadione. Sov. med. 23 no.3:112 Mr '59. (MIRA 12:4)

1. Iz khirurgicheskogo otdeleniya (zav. - prof. G.A. Rikhter) 51-y Moskovskoy gorodskoy bol'nitsy (glavnyy vrach N.F. Kravchuk.)
(PHENYLBUTAZONE, inj. eff.
gastrointestinal hemorrh. (Rus))
(GASTROINTESTINAL SYSTEM, hemorrh.
caused by phenylbutazone (Rus))

KILINSKIY, Ye.L.; KUNYNDLIN, Yu.Z.

Superficial cord-like phlebitis. Khirurgiia 35 no.4:107-110 Ap '59. (MIRA 12:8)

1. Iz poliklinicheskogo otdeleniya (zav. khirurgicheskogo otdeleniyem M.V.Dement'yeva) 15-y gorodskoy bol'nitsy (glavnyy varch M.D.Vashchenko, nauchnyy konsul'tant - prof. V.A.Ivanov), Moskva.
(THROMBOPHLEBITIS, case reports
Mondor's dis. (Rus))

KREYNDLIN, Yu.Z.

Pathogenesis and treatment of acute thrombophlebitis. Khirurgiia 40 no.5:94-100 My '64. (MIRA 18:2)

1. Kafedra obshchey khirurgii (zav.- prof. V.A. Ivanov) II Moskovskogo meditsinskogo instituta imeni Pirogova.

YERMOLOV, A.S.; KREYNDLIN, Yu.Z.; YEGOROV, I.V.; BOCHAVER, O.S.; KAL'TER, I.S.

Use of indirect cardiac massage in clinical practice. Khirurgiia 40 no.7:36-40 Jl '64. (MIRA 18:2)

1. Kafedra obshchey khirurgii lechebnogo fakul'teta (zav. - prof. V.A. Ivanov) II Moskovskogo gosudarstvennogo meditsinskogo instituta imeni Pirogova.

KREYNDLIN, Yu.Z.

Side effect, ulcerogenic action of butadione. Sov. med. 27 no.12:99-101 O '64. (MIRA 18:11)

1. Kafedra obshchey khirurgii (zav.- prof. V.A. Ivanov) lechebnogo fakul'teta II Moskovskogo meditsinskogo instituta imeni Pirogova i khirurgicheskoye otdeleniye (zav.- I.K. Kletskiy) 51-y bol'nitsy, Moskva.

KREYNER, S. Kh.

Subject : USSR/Engineering AID P - 1093

Card 1/1 Pub. 78 - 4/21

Author : Kreyner, S. Kh.

Title : Standardization of triple rotary cutter-bits

Periodical : Neft. khoz., v. 32, #10, 15-18, O 1954

Abstract : Graphical and analytical studies of the operation of rotary cutter parts are outlined. The results of these studies led to technological improvements in the manufacturing of cutters. Four tables and 3 sketches.

Institution : VNII burneft (All-Union Scientific Research Institute of Oil Well Drilling)

Submitted : No date

KREYNER, S.Kh.

Insertion dies. Neftianik 1 no.12:26 D '56. (MIRA 12:3)

1. Glavnyy konstruktor zavoda imeni S.M. Kirova.
(Dies (Metalworking))

KREYNES, A.P., inzh.

Initial operation and adjustment of a centralized waste-heat boiler unit in connection with open-hearth furnaces at the Stalino Metallurgical Plant. Trudy NTO chern. met. 20:319-327 '60. (MIRA 13:10)

1. Leningradskiy filial TSentral'nogo proyektno-konstruktorskogo byuro tresta "Energochermet".
(Stalino (Stalino Province)--Metallurgical plants)
(Boilers)

KREYNES, A.Ya., inzh.

General conditions of metal gripping by rolls in rolling. Obr. met.davl. no.2:23-28 '53. (MIRA 12:10)
(Rolling (Metalwork))

1. KREYNIS, I. I.

2. USSR (600)

4. Kuybyshev,Province - Geology, Structural

7. Report on the work of the Krasnoyarsk electric geophysical exploration party in 1943. [Abstract.] Izv. Glav. upr. geol. fon. no. 3. 1947

9. Monthly List of Russian Accessions, Library of Congress, March 1953, Uncl.

KREYNES, I.I.

Graphic method for interpreting "VEZ" curves. Razved.i prom.geofiz. no.17:48-59 '57. (MIRA 10:12)
(Prospecting--Geophysical methods) (Seismic waves)

KREYNES, I.I.

Distortions in vertical electrical prospecting due to vertical contact of electrically inhomogeneous horizons. Prikl. geofiz. no.17:152-161 '57. (MIRA 11:2)
(Prospecting--Geophysical methods)

KLEYNES, M. A.

Sur une classe de fonctions de plusieurs variables. Matem. SB., 9 (51), (1941), 713-720.

SO: Mathematics in the USSR, 1917-1947
Edited by Kurosh, A. G.,
Markusevich, A. I.
Rashevskiy, P. K.
Moscow-Leningrad, 1948

KREYNES, M. A.

"Contribution to the Question of Determining the Efficiency of a Gearing," Dokl. AN SSSR, 41, No.8, 1943.

Moscow State U. im. Lomonosov

[redacted], M. and [redacted], M.

Moscow University im. Lomonosov (-1945-)

Moscow Higher Technical School imeni Bauman (-1945-).

"Design of Angular Velocities of Regular Geared Mechanisms with Two Degrees of Freedom", Iz Ak Nauk SSSR Otdel Tekh Nauk, Nos. 10-11, 1945.

BR-52059019

KREYNES, M. A.

"Diagram of Angular Velocity Ratios of a Regular Toothed Gear Mechanism with Three Degrees of Freedom," Dokl. AN SSSR, 48, No.3, 1945

Bauman Higher Technical School, Moscow
Moscow State U. im. Lomonosov

KREYNES, M. A.

"Determination of the Efficiency of a Toothed-Gear Mechanism with Many Degrees of Freedom," Dokl. AN SSSR, 48, No.7, 1945

AMR

Mechanics (Dynamics, Statics, Kinematics)

975. Kreines, M. A. The coefficient of efficiency and the transmission ratio of compound gear trains, 1, 21-48, 1947.

Paper deals with gear trains consisting of a number of simple (three-member) epicyclic (planetary) trains, $K_1, \ldots, K_n$ whose arms (i.e., the members connecting the axles) rotate about fixed axes. Only torques are assumed to act at the members, and friction only between the teeth is considered. If i_q is the train ratio (with the arm at rest) of K_q, the over-all transmission ratio is $i=f(i_1,\ldots, i_n)$ where f is a quotient of two linear functions. If η is the efficiency, $\eta = f(i_1\eta_1^{-1},\ldots, i_n\eta_n^{-1})/f(i_1,\ldots,i_n)$ where the exponent of η_q depends on which of the two wheels of K_q is driving. If all η_q are close to 1, the exponent of η_q is $\operatorname{sgn} j_q$, where $j_q = \partial \log |i| / \partial \log |i_q|$. In this case $n \approx 1 - \sum |j_q| (1 - \eta_q)$. Several numerical examples are given. In general, j_q is the fraction of power lost in K_q. A general method for the determination of f is given in chap. 3. The argument is valid also for spatial gear trains.

A. W. Wundheiler, USA

The above article appeared, in Russian, in Trudi Sem. Teor. Mash. Mekh.

KRAYNES

PETROVSKIY, I.G.; VOVCHENKO, G.D.; SALISHCHEV, K.A.; SERGEYEV, E.M.; MOSKVITIN, V.V.; SRETENSKIY, L.V.; GEL'FOND, A.D.; GOLUBEV, V.V.; ALEKSANDROV, P.S.; SOBOLEV, S.L.; BAKHVALOV, S.B.; OGUBALOV, P.M.; KRAYNES, M.A.; MYASNIKOV, P.V.; ZHIDKOV, M.P.; GAL'PERN, S.A.; ZHEGALKINA-SIUDSKAYA, M.A.

Vsevolod Aleksandrovich Kudriavtsev; obituary. Vest.Mosk.un. 8 no.12:129 D '53. (MLRA 7:2)
(Kudriavtsev, Vsevolod Aleksandrovich, 1885-1953)

KREYNES, M A.

USSR

Kreines, M. A., and Aizenštat, N. D. On the possibility of nomographing with accuracy up to infinitesimals of higher order. Dokl. Akad. Nauk SSSR (N.S.) 95, 1137–1140 (1954). (Russian)

1 - F/W

62

(1)

Moscow State U. im. Lomonosov

KREYNES, M.

USSR/Engineering - Mechanics

Card : 1/1

Authors : Kreynes, M. and Rozovskiy, M.

Title : Selection of gear reduction systems consisting of three differential three-link mechanisms

Periodical : Dokl. AN SSSR, 96, Ed. 6, 1117 - 1120, June 1954

Abstract : Report describes a method of selecting gear reduction systems consisting of three differential three-link mechanisms simply by studying numerous surface diagrams consisting of straight lines only. Statically determinable reductors consisting of three differential three-link mechanisms with basic coaxial links were investigated. It is shown that each such reduction (reducing gear) should have no less than 5 basic links - master link I, slave link II, stationary link and two auxiliary links. One reference. Graphs.

Institution : ...

Presented by : Academician L. I. Sedov, March 19, 1954

KREYNES, M.A.

Kreĭnes, M. A.; and Alzenštat, N. D. On nomographing with accuracy up to infinitesimals of higher order. Mat. Sb. N.S. 37(79) (1955), 337–352. (Russian)

$z=f(x, y)$ is said to be nomographable with accuracy up to infinitesimals of kth order in the neighborhood of the "ordinary" point x_0, y_0, z_0 if, briefly, $f(x, y)-N(x, y)=O(\varrho^k)$, where $\varrho=[(x-x_0)^2+(y-y_0)^2]^{\frac{1}{2}}$ and $z=N(x, y)$ is equivalent, in the neighborhood of x_0, y_0, z_0, to the vanishing of $\Delta(x, y, z)$, a Massau determinant. Attention can be restricted to $x_0=y_0=z_0=0$ and it is shown that transformations exist whereby $z=f(x, y)$ can be considered to be in the form

$$Z=X+Y+XY(X-Y)\sum_{0}^{k-3} q_{ij}X^iY^j+O(\varrho_{00}^k),$$

where $X=X(x)$, etc. Means for determining $X=X(x)$, etc., are not given. The coefficients of the Taylor expansions of the functions in Δ are obtained explicitly, in terms of the q_{ij} and arbitrary constants, for k up to 7, and necessary and sufficient conditions for determining them for $k=8$ and 9 are given. It follows that if $f(x, y)$ can be differentiated six times at x_0, y_0, and its first derivatives do not vanish there, $z=f(x, y)$ is nomographable to sixth order in the neighborhood of x_0, y_0. It is nomographable to the seventh order and even to the eighth

1/2

KREĬNES, M.A.; AĬZENŠTAT, N.D.

"as a rule" since not to be so requires satisfying certain conditions among the q_{ij} (five in number for $k=7$). Ninth-order nomographiability is attained only for functions which satisfy two conditions among the q_{ij}. Consideration is given to the vanishing of f_x or f_y or both. This did not appear in the authors' earlier brief report of this investigation [Dokl. Akad. Nauk SSSR (N.S.) 95 (1954), 1137–1140; MR 16, 633]. *R. Church.*

2/2

Grw

KREYNES, M.A., (Moskva); AYZENSHTAT, N.D., (Moskva).

Nomographing with accuracy to within higher order terms. Mat.shor.
37 no.2:337-352 S-O '55. (MLRA 9:1)
(Nomography (Mathematics))

KREYNES, M. A.

Call Nr: AF 1108825

Transactions of the Third All-union Mathematical Congress (Cont.) Moscow, Jun-Jul '56, Trudy '56, V. 1, Sect. Rpts., Izdatel'stvo AN SSSR, Moscow, 1956, 237 pp.

Card 45/80

KREYNES, M.A.; VAYNSHTEYN, I.A.; AYZENSHTAT, N.D.

A device for plotting approximate nomograms. Dokl. AN SSSR 110 no.6:922-925 O '56. (MLRA 10:2)

1. Predstavleno akademikom A.N. Kolmogorovym.
(Nomography (Mathematics))
(Mathematical instruments)

KREYNES, M.A.; VAYNSHTEYN, I.A.; AYZENSHTAT, N.D.

Nomograms for functions given on a grid. Dokl. AN SSSR 111 no.5: 941-944 D '56. (MLRA 10:2)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova. Predstavleno akademikom A.N. Kolmogorovym.
(Nomography (Mathematics)) (Functions of complex variables)

16(1)

AUTHORS: Kreynes, M.A., Vaynshteyn, I.A., Ayzenshtat, N.D. (Moscow)

SOV/39-48-3-5/5

TITLE: Some Examples of Non-nomographic Functions

PERIODICAL: Matematicheskiy sbornik,1959,Vol 48,Nr 3,pp 377-395 (USSR)

ABSTRACT: The authors consider functions which are nomographed on a net and functions nomographed by means of continuous functions in a rectangle. Some examples of non-nomographic functions are given. The results of the paper are already contained in [Ref 1]. Altogether there are 28 theorems and auxiliary theorems and 2 examples.
There are 1 figure, and 2 references, 1 of which is Soviet, and 1 German.

SUBMITTED: October 23, 1957

Card 1/1

16(1),16(2)

AUTHORS: Kreynes,M.A., and Kishkina,Z.M. SOV/20-125-2-5/64

TITLE: On the Approximation by Functions of the Fifth Nomographic Order (O priblizhenii funktsiyami pyatogo nomograficheskogo poryadka)

PERIODICAL: Doklady Akademii nauk SSSR,1959,Vol 125,Nr 2,pp 262-265 (USSR)

ABSTRACT: The authors construct an example: A nomographable function defined on the net, which can not be approximated by certain functions also nomographable and defined on the same net. There are 2 figures, 1 table, and 1 Soviet reference.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova (Moscow State University imeni M.V.Lomonosov)

PRESENTED: December 8, 1958, by A.N.Kolmogorov, Academician

SUBMITTED: November 24, 1958

Card 1/1

AYZENSHTAT, M.D.; VAYNSHTEYN, I.A.; KREYNES, M.A.

Non-rectifiable lattices. Trudy Mosk.mat.ob.-va 9:537-561 '60.
(MIRA 13:9)

(Lattice theory)

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S/042/60/015/004/009/017XX
C111/C222

16.2600

AUTHORS: Vaynshteyn, I.A. and Kreynes, M.A.

TITLE: Sequences of Functions of the Form f(X(x)+Y(y))

PERIODICAL: Uspekhi matematicheskikh nauk, 1960, Vol.15, No.4, pp.123-128

TEXT: The authors consider the functions $z = \varphi(x,y)$ defined in the square R: $[0 \leq x \leq 1,\ 0 \leq y \leq 1]$ representable in the form

(1) $z = f(X(x)+Y(Y))$,

where X(x) and Y(y) are continuous on $0 \leq x \leq 1$ resp. $0 \leq y \leq 1$ and z = f(u) on the set of the values which assumes X(x)+Y(y) for $(x,y) \in R$ ("functions of the form (1)"). A function is called monotone with respect to every variable if it is strongly monotone in every single variable when the other variable is kept constant. V.I.Arnol'd (Ref.1) constructed a sequence of considered functions which in R converged uniformly with respect to a function which was not of the form (1). The authors prove the theorem: Let the sequence $f_n(X_n(x)+Y_n(y))$ of functions of the form (1) converge in R uniformly to a function $\phi(x,y)$ monotone and continuous in every variable.

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C111/C222

Sequences of Functions of the Form f(X(x)+Y(y))

Then $\phi(x,y)$ is a function of the form (1) too.
The proof bases on the consideration of the equipotential lines $\phi(x,y)=const$ and the construction of the hexagon of Brianchon and is given geometrically with the aid of five lemmas.
There are 2 figures and 2 references: 1 Soviet and 1 German.

SUBMITTED: January 13, 1959

Card 2/2

68970

~~16(1)~~ 16,500 S/020/60/131/02/008/071

AUTHORS: Areynos, L.A., Vanyshteyn, I.A., and Ayzenshtat, N.D.

TITLE: An Instance of a Lattice Which Cannot be Approximated by Rectifiable Lattices

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 131, Nr 2, pp 249-252 (USSR)

ABSTRACT: Let G be a plane set homeomorphic to the closed square. Three families of curves A,B,C in G are denoted as a lattice S = A,B,C in G if they satisfy the following conditions: 1) through every point of G there goes one curve of the families A,B,C each; 2) two curves of two families intersect at most in one point; 3) for every pair of these families there exists a topological mapping of G for which all curves of the pair go over into straight lines. S is called rectifiable if there exists a topological mapping of G for which all curves of A,B,C go over into straight lines. Let $z = f(x,y)$ be defined in R: $x \leqslant x \leqslant \bar{x}$, $y \leqslant y \leqslant \bar{y}$. The families of curves x = const, y = const, z = const form the lattice corresponding to the function $z = f(x,y)$.

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68970

An Instance of a Lattice Which Cannot be Approximated by Rectifiable Lattices

S/020/60/131/02/008/071

Let $p(t) = \begin{cases} -1/12(t-1)^7 + 7/12(t-1) + 1/2 & \text{for } 0 \leq t \leq 2 \\ 1 & \text{for } t > 2 \end{cases}$, and $p(t)=p(-2t)$ for $t<0$.

Theorem 2: The lattice which corresponds to the function

$$z = f(x,y) \equiv x+y-1,1p(x)p(y)p(x+y) - 0,0001xy(x-2)(x-3)(y+1)\left(y-\frac{3}{2}\right)$$

in the square R: $|x| \leq 3,5$, $|y| \leq 3,5$ cannot be approximated by rectifiable lattices.

There are 3 references, 2 of which are Soviet, and 1 German.

PRESENTED: November 17, 1959, by A.N.Kolmogorov, Academician

SUBMITTED: November 17, 1959

Card 2/2

KISHKINA, Z.M.; KREYNES, M.A.

Nomographing of functions of several variables to within small quantities of higher order. Part I. Vest.Mosk.un. Ser. 1 : mat., mekh.16 no.6:38-45 N-D '61. (MIRA 14:11)

1. Kafedra matematicheskogo analiza Moskovskogo universiteta.
(Functions of several variables)
(Nomography(Mathematics))

VOSTRETSOV, B.A.; KREYNES, M.A.

Approximation of continuous functions by superposition of plane waves. Dokl. AN SSSR 140 no.6:1237-1240 O '61. (MIRA 14:11)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova. Predstavleno akademikom A.N.Kolmogorovym.
(Functions, Continuous) (Sequences (Mathematics))

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S/055/62/000/001/002/007
D299/D303

AUTHOR: Kishkina, Z. M. and Kreynes, M. A.

TITLE: On the nomographing of functions of many variables to within infinitesimals of higher order. II

PERIODICAL: Moskva. Universitet. Vestnik. Seriya I. Matematika, Mekhanika, no. 1, 1962, 9-15

TEXT: Nomographing is considered of functions of 3 and of 4 variables. This article (Part II) is a continuation of Part I which appeared in no. 6, 1961, of the same periodical. Lemma 1: By means of a nomogram of type x,y; z; w), a function of type

$$w = x + z + yz + Dyz^3 + z^2(Ax^2 + 2Bxy + Cy^2) + o(\rho^4) \qquad (1)$$

where A, B, C and D are constants, can be always nomographed (in the neighborhood of the origin) to an accuracy of 4-th order in-

Card 1/3

On the nomographing ...

finitesimals; it can be nomographed to within higher-order infinitesimals, only if C = 0. This lemma is proved. Theorem 1: The function $w = f(x,y,z)$, defined in the neighborhood of the point (x_o, y_o, z_o), k ($k \geqslant 4$) times differentiable at that point and satisfying the conditions

$$\left.\frac{\partial w}{\partial z}\right|_{x_o,y_o,z_o} \neq 0, \qquad \left.\frac{\partial(w,w'_z)}{\partial(x,y)}\right|_{x_o,y_o,z_o} \neq 0$$

can be always nomographed (by a nomogram of type (x,y;z;w)) to within 4-th order infinitesimals; it can be nomographed to within higher-order infinitesimals only if the partial derivatives up to the 4-th order inclusive, satisfy at the point (x_o,y_o,z_o) a special algebraic equation. Another theorem is stated, analogous to

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On the nomographing ...

Theorem 1. An example is given of a polynomial which cannot be nomographed to within 5-th order infinitesimals. Further, nomograms of functions of 4 variables are considered. A nomogram of type (x,y; s,t; w) is defined as the set of the 2 co-planar fields (x,y) and s,t) and of the scale (w), which satisfy certain properties. The function w = N(x,y,s,t), determined by a nomogram of type (x,y; s,t,w), is defined on the set E_{xyst}. A nomogram of type (x, y;s,t;w) is considered. This nomogram is subjected to a projective mapping. Two lemmas are stated which lead to Theorem 3. This theorem states that the function w = f(x,y,st) can be always nomographed to within 2-nd order infinitesimals, but to within higher-order infinitesimals only if the first 2 partial derivatives satisfy a certain condition. An example is given of a function of 4 variables, illustrating the theorem.

ASSOCIATION: Kafedra matematicheskogo analiza (Department of Mathematical Analysis)

SUBMITTED: December 28, 1960

Card 3/3

KREYNES, M.A., doktor fiziko-matematicheskikh nauk, prof.; ROZOVSKIY, M.S., kand.tekhn.nauk

Selecting systems of toothed reducing gears made of three differential three-bar linkages. Vest.mashinostr. 42 no.11:28-33 N '62. (MIRA 15:11)

(Gearing)

S/020/62/144/006/001/015
B112/B104

AUTHORS: Vostretsov, B. A., and Kreynes, M. A.

TITLE: Approximation of plane waves by superpositions of plane waves with given directions

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 144, no. 6, 1962, 1212-1214

TEXT: The following theorem is demonstrated: Any continuous function $f(\vec{a}\vec{x})$ ($\vec{x} \in D$, $\vec{a} \in M$) can be uniformly approximated (within the domain D) by continuous sums of the form $\sum_{i=0}^{N} \varphi_i(\vec{a}_i\vec{x})$ if and only if the point $\vec{a}$ is algebraically dependent on the set M.

PRESENTED: February 7, 1962, by A. N. Kolmogorov, Academician

SUBMITTED: January 20, 1962

Card 1/1

KISHKINA, Z.M.; KREYNES, M.A.

Example of a non-nomographable function. Usp. mat. nauk 19 no.6: 183-186 N-D '64 (MIRA 18:2)

KRELYNES, Mikhail Aleksandrovich; ROZOVSKIY, Maks Solomonovich; BATENINA, T.G., red.

[Gears; mathematical bases for the selection of optimal systems] Zubchatye mekhanizmy; matematicheskie osnovy vybora optimal'nykh skhem. Moskva, Izd-vo Mosk. univ., 1965. 333 p. (MIRA 18:10)

USSR/Math, M. M.

USSR/Math - Nomogram Construction

Card 1/1

Authors : Kreynes, M. M. and Ayzenshtat, N. D.

Title : On the possibility of nomogram construction with precision up to infenitesimals of the higher order.

Periodical: Dokl AN SSSR 95, 6, 1137 - 1140, 21 April 1954

Abstract : Theorems on nomogram construction of higher degrees of precision, analytical expression of the nomograms and their analyses are given in the article. The article also contains two exemplary diagrams.

Institution: M. V. Lomonosov State Univer. at Moscow

Submitted : 21 Feb 1954

KREYNES, N.M.

USSR/Physics - Magnetic properties of ions

Card 1/1 Pub. 146 - 8/44 FD-3249

Author : Borovik-Romanov, A. S.; Kreynes, N. M.

Title : Magnetic properties of trivalent ions of europium and samarium

Periodical : Zhur. eksp. i teor. fiz., 29, No 6(12), Dec 1955, 790-797

Abstract : Measurements of the magnetic susceptibility of Eu_2O_3, Sm_2O_3 (in two crystalline modifications) and of $Sm_2(C_2O_4)_3 \cdot 10\ H_2O$ from 12 to 300°K. The authors discover a strong dependence of the magnetic properties of samarium ion upon the crystalline structure of the compound in which it is a constituent. With decrease in the influence of the crystalline field the experimental curves of the temperature dependence of magnetic susceptibility approach the theoretic curve of Van Fleck for free ions. They describe the apparatus used for the measurement of the magnetic susceptibility in a wide range temperature. The authors thank Professor P. G. Strelkov for his interest and Professor I. N. Zaozerskiy for supplying specimens and giving advice. Twelve references.

Institution : Moscow State Institute of Measurements and Measuring Instruments

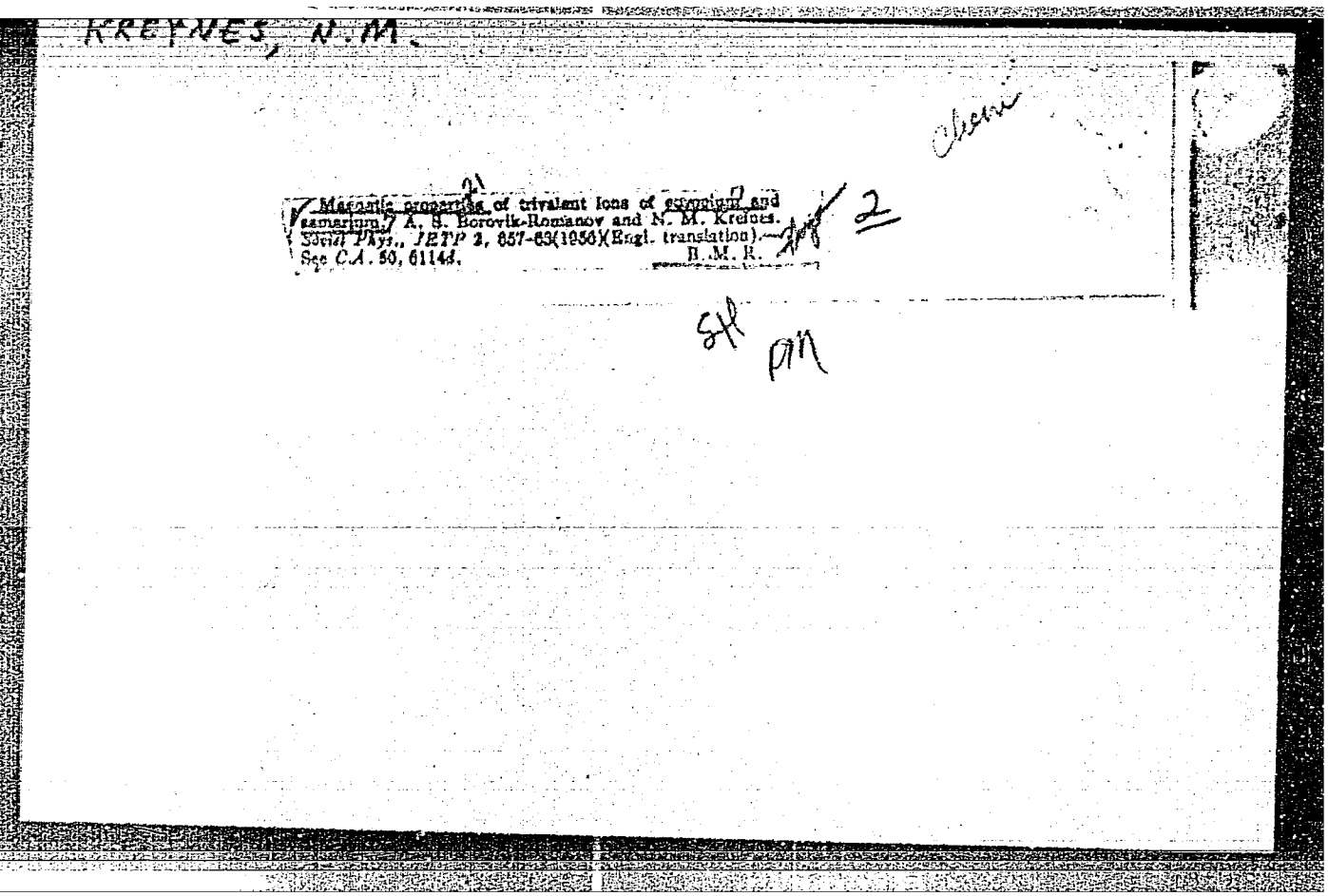
Submitted : August 10, 1954

KREYNES, N. M., KARASIK, B. R., and BOROVIK-ROMANOV, A. S.

"Magnetic Properties of Co and Mn Carbonates and of anhydrous Sulphates of Ni $^{++}$, Fe $^{++}$Co $^{++}$and Cu $^{++}$," a paper submitted at the International Conference on Physics of Magnetic Phenomena, Sverdlovsk, 23-31 May 56.

KREYNES, N. M., KARASIK, B. R. and BOROVIK - ROMANOV, A. S. (Moscow)

"Anti-ferromagnetism of anhydrous Sulphates of Ni^{++}, Fe^{++}, Co^{++}, Cu^{++}," paper presented at the International Conference on Physics of Magnetic Phenomena, Sverdlovsk, USSR, 23-31 May 1956.



KREYNES, N.M.

Magnetic properties of trivalent ions of gadolinium and samarium. A. S. Borovik-Romanov and N. M. Kreines. Soviet Phys., JETP 2, 657-63(1956)(Engl. translation). See C.A. 50, 6114d.

B.M.R.

KREJNES, N.M.

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1323
AUTHOR BOROVIK-ROMANOV, A.S., KARASIK, V.R., KREJNES, N.M.
TITLE The Antiferromagnetism of the Dehydrated Sulphates of Ni^{++}, Fe^{++}, Co^{++}, Cu^{++}.
PERIODICAL Žurn.eksp.i teor.fis, 31, fasc. 1, 18-24 (1956)
Issued: 9 / 1956 reviewed: 10 / 1956

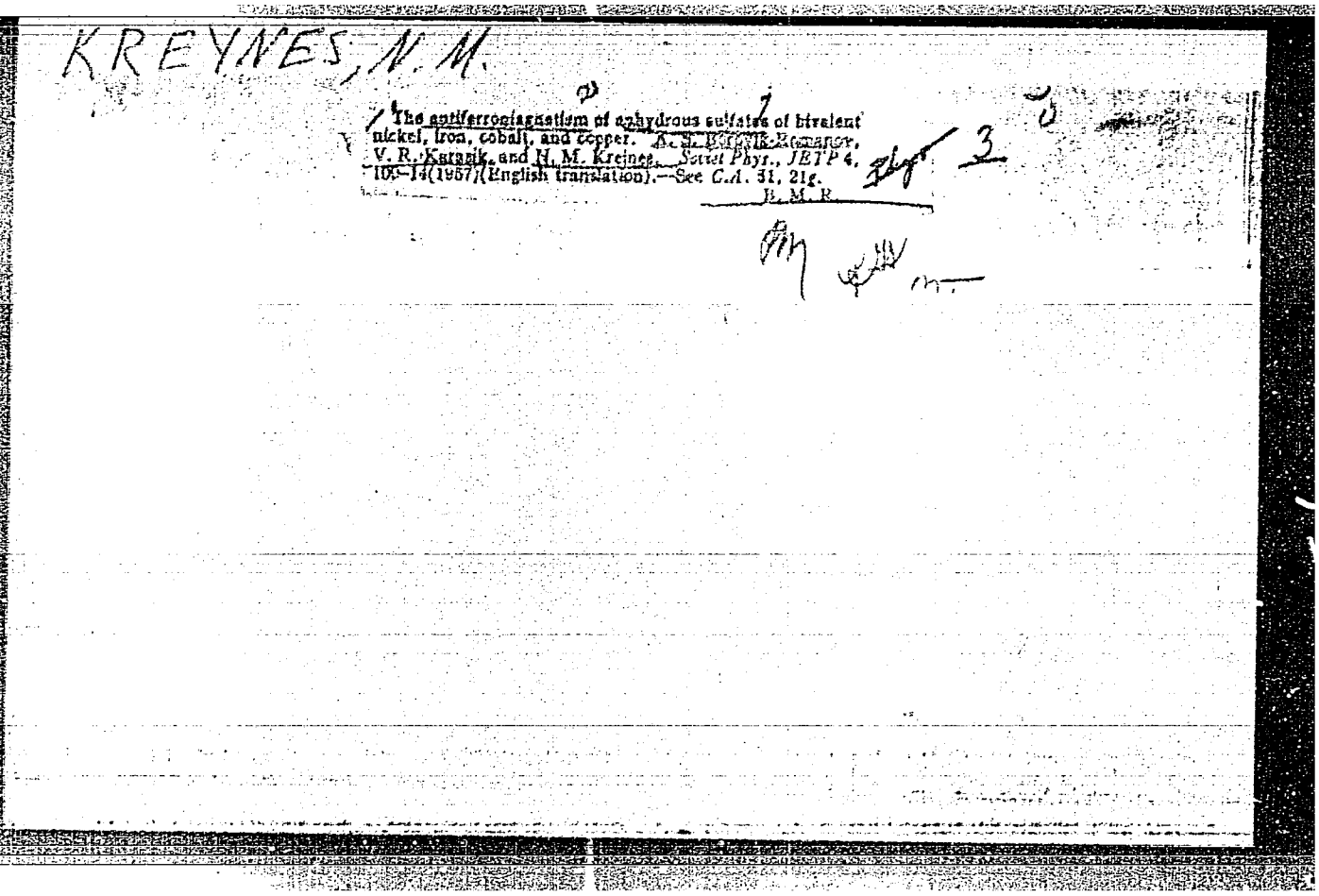
Apparatus and samples: Magnetic susceptibility is measured by the FARADAY method by means of an apparatus developed by BOROVIK-ROMANOV and KREJNES. This apparatus is suited for measuring within the temperature range of 12-300°K. Temperature was measured by means of a copper-constantan thermocouple. Susceptibility was measured at different values of field strength of from 500-2500 oersted. All samples examined were won by eliminating water from the corresponding crystal hydrates.

Measuring results: The magnetic susceptibility of all 4 dehydrated sulphates was measured at temperatures of from 13 to 300° K. For the molar susceptibility of $NiSO_4$, $FeSO_4$ and $CoSO_4$ 4,97; 12,4 and 9,87 respectively was found. All these three sulphates have a characteristic maximum of susceptibility at the CURIE temperature of $T_C = 37°K$ for $NiSO_4$; 21°K for $FeSO_4$, and 15,5°K for $CoSO_4$. At temperatures that are considerably higher than CURIE-temperature the CURIE-WEISS rule $\chi = C/(T + \Theta)$ holds good for all sulphates. The susceptibility of $CuSO_4$ increases noticeably at temperatures below 20° K, and it diminishes considerably at ~ 35° K. Various differences as against the results obtained by

the laboratory of LEYDEN are pointed out and discussed.

Conclusions: The 3 dehydrated sulphates $NiSO_4$, $FeSO_4$ and $CoSO_4$ pass over into the antiferromagnetic state at the temperatures 37.21 and 15.5° K.
The sharp break of the curve of the temperature dependence of the magnetic susceptibility of $CuSO_4$ and the course taken by the curve below 35° K may be explained by the fact that below this temperature half of the magnetic copper ions arranges itself antiferromagnetically. The other half of the ions remains unarranged and is responsible for the increase of susceptibility.
The temperature dependence of the magnetic susceptibility of $CoSO_4$ deviates considerably from the CURIE-WEISS rule at low temperatures in the paramagnetic domain, and diminishes with abnormal rapidity in the antiferromagnetic domain. This is explained qualitatively by the splitting up of the main level of the Co^{++} ion by the crystal field.
In the range of temperature of from 14 to 34° K the magnetic susceptibility of the $NiSO_4$ which is in the antiferromagnetic state depends quadratically on temperature.

INSTITUTION: All-Soviet Scientific Research Institute for Physical-Technical and Radiotechnological Measurements.



KREYNES, N. M.

The antiferromagnetism of anhydrous sulfates of bivalent nickel, iron, cobalt, and copper. B. N. Ostrik-Romanov, V. R. Kotsnik, and N. M. Kreines. *Soviet Phys., JETP* 4, 105–14(1957)(English translation).—See *C.A.* 51, 21g.
B. M. R

KREYNES, N.M.

21(0); 5(4); 6(2) PHASE I BOOK EXPLOITATION SOV/2215

Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii imeni D.I. Mendeleyeva

Referaty nauchno-issledovatel'skikh rabot; sbornik No. 2 (Scientific Research Abstracts; Collection of Articles, Nr 2) Moscow, Standartgiz, 1958. 139 p. 1,000 copies printed.

Additional Sponsoring Agency: USSR. Komitet standartov, mer i izmeritel'nykh priborov.

Ed.: S. V. Reshetina; Tech. Ed.: M. A. Kondrat'yeva.

PURPOSE: These reports are intended for scientists, researchers, and engineers engaged in developing standards, measures, and gages for the various industries.

COVERAGE: The volume contains 128 reports on standards of measurement and control. The reports were prepared by scientists of institutes of the Komitet standartov, mer i izmeritel'nykh priborov pri Sovete Ministrov SSSR (Commission on Standards, Measures, and Measuring Instruments under the USSR Council of Ministers). The participating institutes are: VNIIM - Vsesoyuznyy nauchno-issledovatel'skiy metrologii imeni D.I. Mendeleyeva (All-Union Scientific Research Institute of Metrology imeni D.I. Mendeleyev) in Leningrad; Sverdlovsk branch of this institute; VNIIK - Vsesoyuznyy nauchno-issledovatel'skiy institut Komiteta standartov, mer i izmeritel'nykh priborov (All-Union Scientific Research Institute of the Commission on Standards, Measures, and Measuring Instruments), created from MGIMIP - Moskovskiy gosudarstvennyy institut mer i izmeritel'nykh priborov (Moscow State Institute of Measures and Measuring Instruments) October 1, 1955; VNIIFTRI - Vsesoyuznyy nauchno-issledovatel'skiy institut fiziko-tekhnicheskikh i radiotekhnicheskikh izmereniy (All-Union Scientific Research Institute of Physicotechnical and Radio-engineering Measurements) in Moscow; KhGIMIP - Khar'kovskiy gosudarstvennyy institut mer i izmeritel'nykh priborov (Khar'kov State Institute of Measures and Measuring Instruments); and NGIMIP - Novosibirskiy gosudarstvenyy institut mer i izmeritel'nykh priborov (Novosibirsk State Institute of Measures and Measuring Instruments). No personalities are mentioned. There are no references.

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24(3) 307/56-35-4-45/52

AUTHORS: Borovik-Romanov, A. S., Kreynes, N. M.

TITLE: The Transition From the Antiferromagnetic to the Ferromagnetic State in $CoSO_4$ (Perekhod iz antiferromagnitnogo v ferromagnitnoye sostoyaniye v $CoSO_4$)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 35, Nr 4, pp 1053-1055 (USSR)

ABSTRACT: In the range of 15°K, $CoSO_4$ goes over into the antiferromagnetic state. By a method previously described the authors produced $CoSO_4$ single crystals without water weighing ~1.5 mg, and investigated their magnetic properties within the temperature range of from 1.3 to 70°K. These crystals were bipyramidal in shape. Measurements were carried out along the axis connecting the vertices of the pyramids and along the edges of the ground surface. At all temperatures and at field strengths of up to ~4000 Oe magnetic susceptibility does not depend on field strength. The results obtained by susceptibility measurements carried out along all 3 axes of the crystal are shown

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The Transition From the Antiferromagnetic to the Ferromagnetic State in $CoSO_4$

by a diagram. The curves thus obtained confirm that $CoSO_4$ goes over into the ferromagnetic state at $T_N = 12^{\circ}K$. A very sharp susceptibility peak along the a-axis is possibly connected with the character of the splitting-up of levels of the ion Co^{++} in the crystal field. At $T \rightarrow 0^{\circ}K$ susceptibility does not tend exactly towards zero on any of the axes. The most interesting results are those obtained for great field strengths. Whereas the susceptibility of the axes b and c is independent of field strength up to field strengths of 10,000 Oe, the magnetic properties along the axis a show considerable anomaly. With the application of a field H along the axis a, the molar magnetic moment of $CoSO_4$ increases linearly up to a field strength of H = 12,000 Oe. With a further increase of H by 1,000 Oe, the moment increases sharply from some 100 to 6,000 CGSM, which is followed by a further slight increase. This anomaly is apparently due to the upsetting of the magnetization vectors of the sublattices and to the transition of the substance under investigation from the antiferromagnetic to the ferromagnetic state. The following facts are of particular

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Interest: 1) The ferromagnetic moment does not attain a state of saturation even at field strengths of ~18,000 Oe. 2) The ferromagnetic moment amounts to only 30% of the nominal moment, which was calculated on the assumption of a total freezing-up of the orbital moments. Reference is made to works by other authors. A detailed discussion of the anomaly observed follows after the detailed investigation of this phenomenon within the entire temperature range. The authors thank P. L. Kapitsa, Academician, for his constant interest in this work, and they also express their gratitude to Professor P. G. Strelkov for some valuable advice. There are 2 figures and 6 references, 4 of which are Soviet.

ASSOCIATION: Institut fizicheskikh problem Akademii nauk SSSR (Institute for Physical Problems of the Academy of Sciences USSR)
Vsesoyuznyy institut fiziko-tekhnicheskikh i radiotekhnicheskikh izmereniy (All-Union Institute for Physico-Technical and Radio-technical Measurements)

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24(2), 24(3) SOV/56-35-6-11/44

AUTHOR: Kreynes, N. M.

TITLE: The Magnetic Anisotropy of the $CuSO_4$-Single Crystal in the Antiferromagnetic State (Magnitnaya anizotropiya monokristalla $CuSO_4$ v antiferromagnitnom sostoyanii)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 35, Nr 6, pp 1391-1397 (USSR)

ABSTRACT: Short reference is made in the introduction to several papers concerning the magnetic susceptibility of copper sulfate at low temperatures (Refs 1-3). In two previous papers, the author himself, together with A. S. Borovik-Romanov (Refs 4, 5) investigated the temperature dependence of the magnetic susceptibility of polycrystalline copper sulfate samples, and he showed that the latter go over into the antiferromagnetic state at $T = 34.5^{\circ}K$. For the exact explanation of this anomaly, the temperature dependence of the magnetic susceptibility of copper sulfate single crystals was investigated in the range from 1.5 to $300^{\circ}K$, the results being given by the present paper. The apparatus is described by reference 5, the methods of temperature measurement by reference 6. Measurements were carried out at various values of the magnetic field (from

The Magnetic Anisotropy of the $CuSO_4$-Single Crystal in the Antiferromagnetic State

12.5 to 13.5 kOe). The error of the absolute susceptibility value amounted to not more than $\pm 1.10^{-4}$ per mol. Figure 1 shows a scheme of the experimental arrangement, which is described in short, and so is the production of the samples. The samples of anhydrous $CuSO_4$-single crystals had a size of $3 \times 1 \times 0.2$ mm^3 and a weight of 1 - 2 mg, the lattice parameters were determined as a = 4.88 Å, b = 6.66 Å, c = 9.32 Å. For measurements 2 single crystals of 0.95 and 1.1 mg respectively were found suited. The results obtained by the investigations are shown by figures 2 and 3. The former shows the temperature dependence of the reciprocal molar susceptibility ($\chi_\perp = \chi_b = \chi_c$; $\chi_\parallel = \chi_a$). Within the range of from 300 to 85°K $\chi_\parallel$ coincides with $\chi_\perp$, at lower temperatures the curve divides and $1/\chi_\parallel$ increases sharply with decreasing temperature, whereas $1/\chi_\perp$ decreases. The measuring results for $T > 100°K$ are from reference 4. Figure 3 shows the temperature dependence of $\chi_\parallel$ - and $\chi_\perp$ within the range $T < 60°K$. For $T < 45°K$ $\chi_\perp$ shows an exponential increase up to a maximum at

The Magnetic Anisotropy of the $CuSO_4$-Single Crystal in the Antiferromagnetic State

at 34.5°K, and if temperature drops further, also $\chi_\perp$ decreases slightly. From 60 to 34.5°K $\chi_\parallel$ develops as a straight line, and if temperature drops further, it decreases and asymptotically approaches the T-axis. Figure 5 once more shows the temperature dependence of $\chi_\parallel$ on $CuSO_4$-single crystals below Curie (Kyuri)-point. In conclusion, the author discusses a possible scheme of the magnetic structure of copper sulfate crystal (Fig 4). He thanks A. S. Borovik-Romanov for supervising work, and expresses his gratitude to P. L. Kapitsa, Academician, for the interest he displayed and to Professor P. G. Strelkov for his valuable advice. He further thanks V. I. Kolkol'nikov for assisting in measurements. In a footnote gratitude is expressed to N. N. Mikhaylov who grew the crystals in his laboratory. There are 5 figures and 19 references, 7 of which are Soviet.

ASSOCIATION: Institut fizicheskikh problem Akademii nauk SSSR (Institute for Physical Problems of the Academy of Sciences, USSR) and All Inst. for Physico-Techn. Radio Engineering Measurements

KREYNES, N. M.

24(0) SOV/30-59-2-42/60

AUTHOR: Khalatnikov, I. M., Doctor of Physical and Mathematical Sciences

TITLE: Investigations of Low-temperature Physics (Issledovaniya po fizike nizkikh temperatur)

PERIODICAL: Vestnik Akademii nauk SSSR, 1959, Nr 2, pp 98-100 (USSR)

ABSTRACT: The 5th All-Union Conference on this problem took place in Tbilisi from October 27 to November 1, 1958. It was attended by physicists from Moscow, Khar'kov, Leningrad, Tbilisi, Sverdlovsk, and Kiyev. 4 fields of low-temperature physics were discussed: superliquidity of liquid helium II, supraconductivity, antiferromagnetism, magneto-resistive effect. The following reports and communications were heard: A. A. Abrikosov, L. P. Gor'kov reported on the investigation of the properties of supraconductive alloys. A. A. Abrikosov, L. P. Gor'kov, I. M. Khalatnikov spoke of properties of supraconductors in the high-frequency magnetic field. D. V. Shirkov and Chen' Chun'-yan' and Chzhou Si-shin', two young Chinese scientists working at Moscow University, described investigations for determination of the influence exercised by the Coulomb (Kulon) interaction of charges on supraconductivity. V. V. Tolmachev explained the

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nature of the so-called collective excitations of the Bose type in supraconductors. D. N. Zubarev, Yu. A. Tserkovnikov spoke of the thermodynamics of supraconductors and B. T. Geylikman, V. Z. Kresin of the thermal conduction of supraconductors. Yu. V. Sharvin, V. F. Gantmakher reported on experimental work with supraconductors. N. V. Zavaritskiy spoke of the measurement of the anisotropy of thermal conductivity in the supraconductive state. In a series of reports problems of the superliquidity of helium were discussed, which was discovered in 1938 by P. L. Kapitsa and the theory of which was set up in 1941 by L. D. Landau. E. L. Andronikashvili and his collaborators investigated the properties of rotating helium. V. P. Peshkov spoke of the effect of the formation of the boundary between superliquid and non superliquid helium. Guan Vey-yan', collaborator of the Institut fizicheskikh problem (Institute of Physical Problems) investigated the properties of the so-called jump in temperature of Kapitsa. I. M. Lifshits, V. G. Peschanskiy investigated galvanomagnetic phenomena in strong magnetic fields for metals with open Fermi surfaces. N. Ye. Alekseyevskiy, Yu. P. Gaydukov experimentally investigated the resistance anisotropy of gold monocrystals in the magnetic field. L. S. Kan, B. G. Lazarev combine the presence of a temperature minimum with the structural state of the metal. M. Ya. Azbel' reported on the quantum theory of metallic conductivity in the alternating electromagnetic and constant magnetic field. A. S. Borovik-Romanov reported on the weak ferromagnetism in antiferromagnetic samples of $MnCO_3$. N. M. Kreynes,

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Ye. A. Turov investigated the magnetic anisotropy of the antiferromagnetic monocrystals $CuSO_4$ and $CoSO_4$. R. A. Alikhanov reported on neutronographic investigations of antiferromagnetics. Ye. I. Kondorskiy and collaborators reported on the susceptibility of nickel and nickel-copper alloys at low temperatures. M. I. Kaganov, V. M. Tsukernik reported on kinetic phenomena in ferromagnetics at low temperatures. A. I. Akhiyezer, V. G. Bar'yakhtar, and S. V. Peletminskiy spoke of computations of the relaxation of the magnetic moment in ferromagnetic dielectrics at low temperatures. T. I. Sanadze spoke of observation results of paramagnetic resonance of terbium in the $TbNO_3 \cdot 6H_2O$

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nitrate. G. R. Khutsishvili gave a theoretical analysis of the orientation of the nuclear spin in the Overhauser (Overkhauzer) effect in nonmetals. B. S. Samoylov, V. M. Reynov and collaborators reported on obtaining orientated nuclei. K. F. Sulatova, V. S. Kogan and B. G. Lazarev showed that hydrogen isotopes in solid state have different structures. I. A. Gindin, B. G. Lazarev, Kh. D. Starodubov and V. I. Khotkevich detected polymorphism in a number of metals at low temperatures. E. L. Andronikashvili, V. P. Peshkov and M. P. Malkov reported on the stage of development of foreign scientific research work in the field of low-temperature physics. At the end of the Conference P. L. Kapitsa spoke of his successful development of investigations in the field of low-temperature physics. The participants of the Conference visited the Institut fiziki Akademii nauk Gruzinskoy SSR (Physics Institute of the Academy of Sciences of the Gruzinskaya SSR) and the Physics Faculty of Tbilisi University as well as the building of the new research atomic reactor near Tbilisi.

21(0) SOV/53-67-4-7/7

AUTHOR: Chentsov, R.

TITLE: The Fifth All-Union Conference on the Physics of Low Temperatures (5-ye Vsesoyuznoye soveshchaniye po fizike nizkikh temperatur)

PERIODICAL: Uspekhi fizicheskikh nauk, 1959, Vol 67, Nr 4, pp 743-750 (USSR)

ABSTRACT: This Conference took place from October 27 to November 1 at Tbilisi; it was organized by the Otdeleniye fiziko-matematicheskikh nauk Akademii nauk SSSR (Department of Physico-mathematical Sciences of the Academy of Sciences, USSR), the Akademiya nauk Gruzinskoy SSR (Academy of Sciences, Gruzinskaya SSR), and the Tbilisskiy gosudarstvennyy universitet im. Stalina (Tbilisi State University imeni Stalin). The Conference was attended by about 300 specialists from Tbilisi, Moscow, Khar'kov, Kiyev, Leningrad, Sverdlovsk, and other cities as well as by a number of young Chinese scientists at present working in the USSR. About 50 lectures were delivered which were divided according to research fields.

IV. Magnetism. A. S. Borovik-Romanov (IFP) delivered a report on investigations he carried out of the anisotropy of the weak ferromagnetism in monocrystal samples of the antiferromagnetic $MnCO_3$ (the effect of anisotropy was predicted by the thermodynamical theory developed by Dzyaloshinskiy). In the course of the discussion R. A. Alikhanov (IFP) spoke about neutronographical investigations he carried out of the magnetic structure of $MnCO_3$ and $FeCO_3$ at low temperatures. P. L. Kapitsa stressed the importance of the method based upon Dzyaloshinskiy's theory. N. M. Kreynes (VNIIFTRI), whose lecture was read by A. S. Borovik-Romanov, reported on measurements carried out by him (in the IFP) of the magnetic anisotropy of the antiferromagnetic $CuSO_4$- and $CoSO_4$-monocrystals.

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Ye. A. Turov (IFM AN SSSR, Sverdlovsk) spoke about his theoretical investigations of the magnetizability, the susceptibility, the specific heat, and the resonance frequencies of antiferromagnetics and weak ferromagnetics. A. I. Sudovtsov and Ye. Ya. Semenenko (KhFTI) spoke about measurements of the electric resistance of iron in magnetic fields in a wide temperature range with simultaneous plotting of the magnetization curve. N. V. Vol'kenshteyn, G. V. Fedorov, E. V. Galoshina and M. I. Turchinskaya (IFM AN SSSR) spoke about measurements of magnetization and the Hall effect of polycrystalline samples, nickel and Ni_3Mn at low temperatures. Ye. I. Kondorskiy, V. Rode, U. Gofman and Chang, Shou-ch'un (MGU) gave a report on susceptibility measurements on nickel and its alloys with copper at low temperatures; T. I. Sanadze (TGU) spoke about the spectrum of the paramagnetic resonance of Tb^{3+} in terbium nitrate at temperatures of liquid hydrogen. M. I. Kaganov and V. M. Tsukernik (KhFTI) dealt with the kinetic phenomena in ferromagnetics at low temperatures and with calculation of relaxation time; A. I. Akhiyezer, V. Bar'yakhtar and S. Peletminskiy (KhFTI) carried out a theoretical investigation of the relaxation of the magnetic moment in ferrodielectrics; Vlasov (IFM AN SSSR) showed that a linearly polarized elastic

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(ultrasonic) wave of a frequency of 10^7 cycles when passing through a ferromagnetic substance in the direction of the magnetic field, is subjected to a turn of the polarization plane of the order of 10^{-3} - 10^{-4} radian/cm oersted. M. I. Kaganov pointed out that in this connection yet another phenomenon may be observed, namely the resonance absorption of ultrasonics if the wavelength is equal to the radius of the Larmor orbit of the electron. V. Various Questions. One of the most interesting lect.

KREYNES, N. M., Cand Phys-Math Sci, "Antiferromagnetism of Mn^{++}, Ni^{++}, Fe^{++} and Cu^{++} anhydrous sulfates." Moscow, 1961. (Min of Higher and Sec Spec Ed RSFSR. Moscow Phys-Tech Inst). (KL-DV, 11-61, 208).

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B102/B202

24.2200 1138, 1155, 1164

AUTHOR: Kreynes, N.M.

TITLE: Transition from the antiferromagnetic state into a state with weak ferromagnetism in a magnetic field

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40, no. 3, 1961, 762 - 774

TEXT: This is the continuation of previous papers in which the author together with other scientists studied the magnetic properties of unhydrous sulfates of Ni^{2+}, Co^{2+}, Fe^{2+}, and Cu^{2+}. An anomalous increase in susceptibility near the transition point was observed in the paramagnetic region. In this paper, the author describes the studies of the anomaly observed in $CoSO_4$ in the temperature region of from 1.3 - 15°K. It is also demonstrated that the anomalies observed in $CoSO_4$ and $CuSO_4$ above T_N are related to the fact that an antiferromagnetic order occurs in that group of the unhydrous sulfates which shows weak ferromagnetism. The author studied single crystals (produced by N.D. Mikhaylov) with a maxi-

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B102/B202

Transition from the ...

mum weight of 1.0 - 1.5 mg and a length not exceeding 1 mm, having the form of a quadrangular bipyramid, belonging to the space group D_{2h}^{16}, with the lattice constants a = 8.46 Å, b = 6.66 Å, and c = 4.65 Å. The apparatus used for the magnetic measurements has been described already earlier (dissertation). The accuracy of measurement was 5 - 6 % at high temperatures, and 2% at the low temperatures. At all temperatures, at fields of up to ~4 koe susceptibility proved to be independent of the field. In the range of from 300 to 14-18°K the susceptibilities coincided in the directions of the axes a and b, and in almost the entire range $\chi_{a,b} > \chi_c$; only at $T \approx 27^\circ K$, the anisotropy of susceptibility changed its sign. In the range of about 100-300°K, the Curie-Weiss law was fulfilled for both directions, in the c-direction the law $\chi = 2.89/(T+64)$ held with a g-factor of 2.48, in the b-directions $\chi = 3.59/(T+50)$ [Abstracter's note: printing error?] with a g-factor equal to 2.77. The results of the investigations are graphically represented. Fig. 1 shows the temperature dependence of the reciprocal molar susceptibility in the direction of the axes a, b, c; the susceptibilities have a maximum in all directions at

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T_N = 12°K. Figs. 2 and 3 show the dependence of the molar magnetic moment of $CoSO_4$ in the c-direction on the magnetic field at different temperatures and on the temperature at different field strengths; the figures beside the curves show the temperature in °K, and the field strength in koe. The anomalous increase of the magnetic moment in the magnetic field of $CoSO_4$ has been observed earlier by S.S. Shalyt (ZhETF, 15, 246, 1945) in $FeCl_2$; $CoSO_4$ is the first ion crystal with an antiferromagnetic sign of Θ, in which the initial antiferromagnetic structure is distorted by a relatively weak field ($\mu H \ll kT$). The antiferromagnetic order with weak ferromagnetism is theoretically studied by using the theory of phase transitions of second kind by I.Ye. Dzyaloshinskiy. A crystal of this space group has four metal ions per unit cell with the spins $\vec{s}_1 .. \vec{s}_4$, the mean magnetic moment of the unit cell is given by $m = \sum_{i=1}^{4} \vec{s}_i$ the antiferromagnetic vectors are defined by $\vec{l}_1 = \vec{s}_1 - \vec{s}_2 - \vec{s}_3 + \vec{s}_4$; $\vec{l}_2 = \vec{s}_1 - \vec{s}_2 + \vec{s}_3 - \vec{s}_4$; $\vec{l}_3 = \vec{s}_1 + \vec{s}_2 - \vec{s}_3 - \vec{s}_4$.

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With $A = \lambda(T-T_N)$ and (6)

$$T_1 = T_N - \lambda^{-1}(a_1 - \beta_2^2/(B+b_2)), \quad T_2 = T_N - \lambda^{-1}(a_2 - \beta_1^2/(B+b_1)), \qquad (6)$$

(7)

$$m_x = \left[\frac{1}{B+b_1} + \frac{\beta_1^2}{(B+b_1)^2(T-T_2)\lambda}\right] H_x,$$

$$m_y = \left[\frac{1}{B+b_2} + \frac{\beta_2^2}{(B+b_2)^2(T-T_1)\lambda}\right] H_y, \quad m_z = \frac{H_z}{B}; \qquad (7)$$

$$l_x = \frac{\beta_2 H_y}{(B+b_2)\lambda(T_2-T)}, \quad l_y = \frac{\beta_1 H_x}{(B+b_1)\lambda(T_1-T)}, \quad l_z = 0.$$

is obtained for $T < T_N$, with neglection of the term Cl^4, for $T > T_N$, and $A+Cl^2=0$, $l^2 = -A/C$:

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(8)

$$m_x = \frac{H_x}{B + b_1 - \beta_1^2 / a_1}, \quad m_y = \frac{H_y}{B + b_2 - \beta_2^2 / a_1}, \quad m_z = \frac{H_z}{B}; \qquad (8)$$
$$l_x = \frac{\beta_1 H_y}{\beta_2^2 - (B + b_2) a_1}, \quad l_y = \frac{\beta_1 H_x}{\beta_1^2 - (B + b_1) a_1}, \quad l_z^2 = l^2 - (l_y^2 + l_x^2).$$

is obtained. If the magnetic field lies in the direction of the antiferromagnetic order

(13a)

$$l_z = 0, \quad \frac{\beta}{l_1 B} H_z = C_1 l_1^2 + \lambda_1 (T - T_1), \quad m_z = \frac{H_z + \beta l_1}{B}; \qquad (13a)$$
$$l_2^2 = -[\lambda (T - T_N) + D l_1^2] C_2^{-1},$$

and (14)

$$\lambda (T - T_N) = A_2, \quad \lambda_1 (T - T_1) = A_1 + a - \beta^2 / B \qquad (14)$$

are obtained. Finally, the theoretically obtained results for $CuSo_4$ and $CoSO_4$ are compared with the experimental ones. Good qualitative agreement

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was obtained, especially for $CoSO_4$. The author thanks A.S. Borovik--Romanov for his interest and the supervision of the studies, Academician P.L. Kapitsa for his interest, I.Ye. Dzyaloshinskiy for advice and discussion, and V.I. Kolokol'nikov for assistance; Ye.A. Turov, V.Ye. Naysh, and V.I. Ozhogin are mentioned. There are 9 figures, 1 table, and 22 references: 12 Soviet-bloc and 10 non-Soviet-bloc.

ASSOCIATION: Institut fizicheskikh problem Akademii nauk SSSR (Institute for Physical Problems of the Academy of Sciences, USSR)

SUBMITTED: October 25, 1960

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26721
S/056/61/041/005/036/038
B109/B102

24.2200 (1160,1164,1482)

AUTHORS: Katser, Yan, Kreynes, N. M.

TITLE: Hexagonal anisotropy in $MnCO_3$ and $CoCO_3$

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41, no. 5(11), 1961, 1691-1692

X

TEXT: Measurements of the anisotropy in $MnCO_3$ and $CoCO_3$ single crystals yielded results which differed considerably from those obtained by M. Date (Ref. 4: Phys. Soc. Japan, 15, 2251, 1961). The measurements were carried out at $MnCO_3$ and $CoCO_3$ disks which had been prepared by a method according to N. Yu. Ikornikova at the Institut kristallografii AN SSSR (Institute of Crystallography AS USSR). $CoCO_3$ specimens: 0.6 mm diameter, 0.35 mm thick, weight 0.472 ± 0.01 mg, density $\varrho = 4.25$ g/cm^3. $MnCO_3$ specimens: 1.3 mm diameter, 0.35 mm thick. The trigonal [111] axis of the specimens was perpendicular to the base of the disks. Anisotropy measurements were made by means of torsion balances

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Hexagonal anisotropy in...

($D' = 1.24 \cdot 10^{-3}$ dyne/cm/mm, reading accuracy ~0.1 mm) at temperatures of liquid helium, hydrogen, and nitrogen, and at room temperature in a magnetic field of 5600 oersteds. The latter value is more than twice the saturation value for $MnCO_3$ and $CoCO_3$, as given by A. S. Borovik-Romanov and V. I. Ozhogin (ZhETF, 39, 27, 1960). The measurements with $MnCO_3$ showed that (1) $MnCO_3$ has a slight hexagonal anisotropy at any temperature, (2) the amount of this anisotropy is less than 1 erg/cm^3. This contradicts the values found by Date. (3) Below the Neel point (32.5°K) there is no crystallographic anisotropy at all. In the case of $CoCO_3$, the measurements showed a strong anisotropy ($K_3 = 634$ erg/cm^3 at 4.2°K). On the other hand, $K_3 = 0$ at all temperatures above the Neel point (18.1°K). The field strength at which saturation occurs, was found from the relation $H_{c_3} = 18\ K_3/I_s$, where I_s denotes the spontaneous ferromagnetic moment per cm^3 (= 50 CGSE). In this was, H_c was found to be 228 oersteds. This value can be explained only when further magnetization processes are assumed

Card 2/3

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since the true value of H_c amounts to $(2-3)\cdot10^3$ oersteds. Academician P. L. Kapitsa and A. S. Borovik-Romanov are thanked for their interest and advice. Dzyaloshinskiy is mentioned. There are 5 references: 4 Soviet and 1 non-Soviet.

ASSOCIATION: Institut fizicheskikh problem Akademii nauk SSSR (Institute for Physical Problems of the Academy of Sciences USSR). Fizicheskiy institut Chekhoslovatskoy Akademii nauk (Institute of Physics of the Czechoslovakian Academy of Sciences)

SUBMITTED: September 23, 1961

Card 3/3

KREYNES, N. M., PROZOROVA, L. A., RUDASHEVSKIY, E. G., BOROVIK-ROMANOV, A. S.,

"Antiferromagnetic Resonance in $MnCO_3$ and $CoCO_3$."

report presented at the Symposium on Ferroelectricity and Ferromagnetism, Leningrad, 30 May-5 June 1963.

L 16904-63 EWT(1)/EWP(q)/EWT(m)/BDS/EEC(b)-2 AFFTC/ASD Pi-4 GG/JD

ACCESSION NR: AP3005245 S/0056/63/045/002/0064/0070

AUTHOR: Borovik-Romanov, A. S.; Kreynes, N. M.; Prozorova, L. A. 68 64

TITLE: Antiferromagnetic resonance in manganese carbonate 27

SOURCE: Zhur. eksper. i teoret. fiz., v. 45, no. 2, 1963, 64-70

TOPIC TAGS: magnanese carbonate, antiferromagnetic resonance, nuclear moment interaction, crystallographic anisotropy

ABSTRACT: A detailed study was made of the low-frequency branch of antiferromagnetic resonance in $MnCO_3$, in the range 4.5 to 15 Gcs. The results are described by the equation

$$(\nu/\gamma)^2 = H_{res}(H_{res} + H_D) + H^2_{\Delta 1} \qquad (3)$$

where H_{res} is the external field applied to the basal plane of the crystal, H_D the Dzyaloshinskiy field that gives rise to weak ferromagnetism, and for this case is 4.4 kOe, γ the gyromagnetic square of the ratio, ν the frequency, and H^2_Δ is the gap in the energy spectrum and amounts to 1.6 ± 0.3 kOe^2. The effective field that gives rise to the gap is due not to the crystallographic anisotropy but to

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ACCESSION NR: AP3005245

hyperfine interaction with the nuclear moments that are being ordered. This is confirmed by the strong temperature dependence of $H_{\Delta 1}$, (the resonance field is shifted by 400 Oe when the temperature is decreased from 4.2 to 15°K). The effective exchange field is found to be 300 kOe, and the magnetization of the sublattices in the ground state is found to be 13000 G, which agrees with the value 14000 G obtained assuming total saturation of the spin moments, but it is pointed out that the accuracy of the results is still low. "The authors sincerely thank P. L. Kapitsa for constant interest in the work, and M. S. Khaykin and S. P. Kapitsa for valuable advice in the development of the apparatus." Orig. art. has 5 figures and 6 formulas.

ASSOCIATION: Institut fizicheskikh problem Akademii nauk SSSR (Inst. of Physics Problems, Acad. Sci. SSSR)

SUBMITTED: 21Feb63 DATE ACQ: 06Sep63 ENCL: 00

SUB CODE: PH NO REF SOV: 006 OTHER: 006

BOROVIK-ROMANOV, A. S.; KREYNES, N. M.; PROZOROVA, L. A.; RUDASHEVSKIY, Ye. G.

"The electron resonance in rhombohedral antiferromagnets with weak ferromagnetism."

report submitted for Intl Conf on Magnetism, Nottingham, UK, 6-13 Sep 64.

Inst of Physical Problems, Moscow.

KREYNES, S.A.

VYSOTSKAYA, Veronika Nikolayevna; CHIPIZHENKO, Andrey Ivanovich; MAL'TSEV, M.V., kandidat tekhnicheskikh nauk, retsenzent; SHPICHINETSKIY, Ye.S., kandidat tekhnicheskikh nauk, retsenzent; KREYNES, S.A., inzhener, retsenzent; FOMIN, N.V., redaktor; KAMAYEVA, O.M., redaktor izdatel'stva; KARASEV, A.I., tekhnicheskiy redaktor

[Physical metallurgy] Metallovedenie. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1956. 360 p. (Physical metallurgy)
(MLRA 10:1)

KREYNGAUZ, B., mayor tekhnicheskoy sluzhby.

Device to determine the size of free play of a carbine bayonet.
Voen.vest. 36 no.1:74-75 Ja '56. (MLRA 9:8)
(Bayonets)

KREYNGAUZ, B. I.

USSR/Metals
Carburization
Kinetics

Dec 1947

"Question of Kinetics of Cementation of Cobalt and Nickel From Water Solutions of Metallic Zinc," G. S. Frants, B. I. Kreyngauz, Metal Inst imeni A. A. Baykov, Acad Sci USSR, 7¾ pp

"Izv Akad Nauk SSSR, Otdel Tekh Nauk " No 12

Object of study was to determine conditions for cementation of cobalt and nickel from sulfuric acid solutions of metallic zinc. Among results obtained was the fact that cementation of nickel and cobalt from water solutions of their salts by means of metallic zinc was possible when concentrations of hydrogen ions was pH-3.5 to 4.0. Authors also were able to determine that with similar amounts of metal, cementation of cobalt was twice as active as cementation of nickel. Submitted by Academician I. P. Bardin, 15 Jul 1947.

PA 57T57

cA KREYNGAUZ, B.P 4

Cementation of cobalt from aqueous solutions by metallic zinc. D. M. Chizhikov and B. P. Kreingauz (Acad. Sci. U.S.S.R., Moscow). *Izvest. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk* 1950, 394–400.—Electrode potentials and rates of deposition of Co from sulfate solns. contg. 1 g. Co l. at pH 3.5–4.0, on Zn disks rotated at 60 r.p.m., were detd. with a vol.:surface ratio of approx. 3. The rate of the displacement is of the 1st order, with k = 0.012, 0.021, 0.052 cc. min.$^{-1}$ cm.$^{-1}$, at 50°, 75°, 90°, resp., hence the activation energy = 7.5 kcal. The temp. coeff. indicates the diffusional nature of the process. Cementation of Ni from pure $NiSO_4$ solns. by Zn is incomplete, attaining 50 and 12%, resp., in solns. 1 and 20 g./l. Cementation of Co in mixed Co–Ni solns. Co = 1 g./l., and varying ratios Co:Ni (1:0.5 to 1:20) shows considerable inhibition with increasing amt. of Ni; at a Co:Ni ratio of 1:10, cementation of Co ceases altogether. This is consistent with the behavior of the electrode potential, which becomes increasingly more pos. in the course of the displacement, and is lower with higher amts. of Ni. Presence of Ni lowers the overvoltage of H and thus counteracts the deposition of Co. Increase of the concn. of Co between 0.5 and 3.0 g./l. accelerates its cementation. Sepn. of Co from Ni by way of cementation on Zn is possible only if the concn. of Co is at least twice that of Ni.

N. Thon

Inst. Metals im. A. A. Baykov

1951

KREYNGAUS, B. P.

USSR/Chemistry -- Metals FD-2627

Card 1/1 : Pub. 41-13/21

Author : Kreyngaus, B. P. and Chizhikov, D. M., Moscow

Title : On the mechanism of the reaction of oxidizing cobalt, in solution, with ozone.

Periodical : Izv. AN SSSR, Otd. Tekh. Nauk 4, 141-142, Apr 1955

Abstract : Describes tests whereby cobalt, in solution, is oxidized with ozone. Concludes that the reaction is ionic with a simultaneous hydrolytic separation of cobalt. Photograph of test apparatus. Three USSR references.

Institution :

Submitted : February 25, 1955

USSR/Engineering - Metallography FD-3029

Card 1/1 Pub. 41 - 13/15

Author : Kreyngauz, B. P. and Chizhikov, D. M., Moscow

Title : On the effect of oxygen and the role of sodium sulfite in the process of the cementation of cobalt from solution by metallic zinc.

Periodical : Izv. AN SSSR, Otd. Tekh. Nauk 9, 167-169, Sep 55

Abstract : Presents the results of a study on the effect of dissolved oxygen and the role of sodium sulfite on the cementation of cobalt from a solution of its sulfate by metallic zinc. Describes experiments conducted. Line drawing depicts set-up. Concludes that dissolved oxygen has a negative effect on the rate and degree of cementation of cobalt. Graphs. Five references, 4 USSR.

Institution:

Submitted : May 3, 1955

CHIZHIKOV, David Mikhaylovich; GULYANITSKAYA, Zoya Feodos'yevna; GUROVICH, Natal'ya Aleksandrovna; KITLER, Igor' Nikolayevich; KREYNGAUZ, Bella Pavlovna; NOVOSELOVA, Valentina Nikolayevna; PLIGINSKAYA, Lyubov' Vladimirovna; USTINOVSKIY, Boris Zinov'yevich; KLIMOV, V.A., red. izd-va; LAUT, V.G., tekhn. red.

[Hydro- and electrometallurgy of sulfide alloys and mattes] Gidroelektrometallurgiia sul'fidnykh splavov i shteinov. Moskva, Izd-vo Akad. nauk SSSR, 1962. 204 p. (MIRA 15:9)

1. Chlen-korrespondent Akademii nauk SSSR (for Chizhikov).
(Sulfides--Metallurgy) (Hydrometallurgy)
(Electrometallurgy)

KREYNGEL', I.I.

26092 Kreyngel', I.I. O[illegible] Primeneniya Dr[illegible] Pre[illegible] v Penitsillina Pri Gonorreye U Muzhchin. Sbornik Nauch. Rabot Lechel. Uchrezhdeniy Mosk. Voyen. Okr. Gor'kiy, 1948, S. 281-85.

SO: Leto is' Zhurnal Statey, No. 30, Moscow 1948

POKUDOMINSKIY, I.M.; KHEYNGEL', L.I.; TARBEVSKIY, S.N.

Administration of penicillin associated with autogenous blood in the treatment of gonorrhea. Vest. vener., Moskva No.1:36-40 Jan-Feb 52. (CIML 21:4)

1. Professor for Porudominskiy. 2. Of the Department of Gonorrhea (Head--Prof. I.M. Porudominskiy), Central Skin-Venereological Institute (Director--Candidate Medical Sciences N.M. Turanov).

Kreyngel, L. I.

PORUDOMINSKIY, I.M.;DANSKIY, F.I.;KREYNGEL, L.I.;TARBEYEVSKIY, S.N.

Streptomycin in the treatment of gonorrhea in males. Vest. vener., Moskva no. 5:37-39 Sept-Oct 1952. (CLML 23:3)

1. Professor for Porudominskiy;Candidate Medical Sciences for Danskiy. 2. Of the Central Skin-Venereological Institute (Director -- Candidate Medical Sciences N. M. Turanov), Ministry of Public Health USSR.

9,5370

20774
S/051/61/010/003/008/010
E032/E514

AUTHORS: Gross, Ye. F. and Kreyngol'd, F. I.

TITLE: Infrared Absorption Spectrum of Silver Oxide

PERIODICAL: Optika i spektroskopiya, 1961, Vol.10, No.3, pp.417-418

TEXT: The present authors have investigated the infrared absorption spectrum of Ag_2O. The specimens investigated were 10 to 100 μ thick. The Ag_2O powder, which was compressed to produce these specimens, was obtained from silver nitrate-alkali reaction (M. M. Pavlyuchenko and E. Gurevich, Ref.4). The precipitated Ag_2O was washed in distilled water and dried at 80°C. In order to prevent decomposition of Ag_2O by light, both the reaction and all the subsequent operations were carried out in red light. Chemically pure commercial Ag_2O was also used. The measurements were carried out in the region 410-1500 cm^{-1}, using the ИКС-6 (IKS-6) and IKS-14 infrared spectrometers. Three absorption bands were found in the infrared spectrum of Ag_2O in the above wave number region. They are: two narrow bands at 1073 cm^{-1} and 802 cm^{-1} and a wide band with a maximum at 530 cm^{-1}. An attempt was then made to compare this spectrum with the infrared absorption spectrum of Cu_2O.

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The latter has been extensively investigated by I. Pastrnyak (Ref.5). Since the Ag_2O spectrum should be displaced relative to the Cu_2O spectrum towards longer wavelengths, the 1073 and 802 bands can be directly compared with the 1124 and 848 cm^{-1} bands of Cu_2O. In fact, an estimate of the positions of the absorption bands of Ag_2O corresponding to the above two bands of Cu_2O yielded the values 1080 and 812 cm^{-1}. The discrepancy between these estimated values and the experimental values is very small and can probably be explained by differences in the lattice constants of Ag_2O and Cu_2O. Moreover, the Ag_2O bands are narrower than the Cu_2O bands. The wide Ag_2O band at 530 cm^{-1} has an absorption coefficient greater than 1000 cm^{-1} and hence can be compared with the strong absorption bands of Cu_2O with a "centre of gravity" at 630 cm^{-1}. The 530 cm^{-1} band is more displaced towards the long wavelengths than the 802 and 1073 bands. The results obtained can be explained by assuming the presence of non-polar bonds both in Ag_2O and in Cu_2O. The fraction of the homeopolar component in Ag_2O should be greater than in Cu_2O. Comparison of the absorption spectra of Ag_2O and Cu_2O shows that the absorption band at 8.9 μ